

ABSTRACT

A tunnel junction device capable of controlling its spin retention is provided. The tunnel junction device includes a  $\text{La}_{0.6}\text{Sr}_{0.4}\text{MnO}_{3-\delta}$  electrode (12), a  $\text{La}_{0.6}\text{Sr}_{0.4}\text{Mn}_{1-y}\text{Ru}_y\text{O}_{3-\delta}$  electrode (14), both as ferromagnetic (including ferrimagnetic) metal materials, and a  $\text{LaAlO}_{3-\delta}$  (electrically insulating layer) (13) arranged between the two electrodes (12) and (14).